

Application No. 10/772,918
Amendment After Final
Page 2

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A power source with SOFC fuel cells, including the following components:

a multi-modular unit formed with the fuel cells as modules, the volume of which is less than 10^{-3} m^3 ,

a channel system comprising a first kind of channels by which reactants, namely gaseous fuel and also air, can be fed to the fuel cells and a second kind of channels by which the partially depleted fuel can be discharged from the fuel cell and which second kind of channels is acting as an afterburner stage for the partially depleted fuel,

a casing, which is at least partially made heat insulating,

a heat exchanger which is part of the channel system and in which the air supplied can be heated up with exhaust gas,

an apparatus or means for feeding the air,

an exchangeable or refillable reservoir for the fuel, in which reservoir the fuel is stored at a pressure which is greater than a pressure present at the exterior of the power source and in which the fuel is preferably liquid,

controlled valves in connection lines for the reactants, and

a control,

wherein the fuel cells respectively contain a disc-shaped solid electrolyte, which in addition to ion conducting components also includes electron conducting components which cause an ohmic loss and wherein the ratio of the ion conducting components to the electron conducting components is so designed that in an idling operation of the power source a heat flow from the cells to an environment can be compensated by the ohmic loss.

Claim 2 (previously presented): A power source in accordance with claim 1, characterized in that the solid electrolyte is made up of $\text{Sr}_4\text{Fe}_6\text{O}_{13}$ doped with La and/or Ti, that it

Application No. 10/772,918
Amendment After Final
Page 3

PATENT

is a perovskite of the composition $(La, Sr)(Co, Fe)O_3$ or that it is cerium oxide doped with Gd, Y and/or Sm, wherein the transfer number of the oxygen ions measured at the operating temperature with simultaneous transport of the oxygen ions and electrons has a value between 0.6 and 0.9 and in that mechanically stable support structures for the disc-shaped solid electrolytes are manufactured from crystalline silicon, which has been structured on the micrometer length scale.

Claim 3 (previously presented): A power source in accordance with claim 1, characterized in that it includes a condenser, in particular a super condenser, by means of which peaks of the power requirement, which occur intermittently, are covered and that the condenser at least partially produces a heat insulation in the casing.

Claim 4 (previously presented): A power source in accordance with claim 1, characterized in that an overpressure is produced in the gas-filled fuel cells and channels by means of organs with which the transport of the air and of the exhaust gas can be affected, wherein the air supplied as a heat sink and also as a reactant together with the fuel effects a thermodynamic working performance on the gases, and a part of the pressure energy, which is stored in the exhaust gas, is used in the apparatus for supplying the air.

Claim 5 (previously presented): A power source in accordance with claim 1, characterized in that the fuel is butane or propane.

Claim 6 (previously presented): A power source in accordance with claim 1, characterized in that it has a capacity given by the amount of fuel, that when the fuel reservoir is full the capacity of the power source amounts to at least 3,000 mAh, that the fuel cells switched in series produce a terminal voltage of 3.6 V and that the power source has a diameter of between 2 cm and 3 cm and a height of between 2.5 cm and 3.5 cm.

Claim 7 (previously presented): A method for operating the power source in accordance with claim 1, characterized in that, when there is no requirement for electric power, the feeding to the reactants into the fuel cells is maintained at a low level, so that in this idling state the temperature in the cells remains on such a level that a transfer from the idling state into

Application No. 10/772,918
Amendment After Final
Page 4

PATENT

an energy-delivering normal operating state occurs within a pre-given length of time, wherein this length of time is 10 minutes.

Claim 8 (previously presented): A method in accordance with claim 7, characterized in that in the idling state the temperature of the cells is less than in the energy-delivering normal operating state and that the difference between the temperatures in the normal operating state and in the idling state is advantageously less than 100°K.

Claim 9 (canceled)

Claim 10 (previously presented): A power source in accordance with claim 1, characterized in that the multi-modular unit formed with the fuel cells as modules is less than 10⁴ m³.

Claim 11 (previously presented): A method in accordance with claim 7, characterized in that the transfer from the idling state into an energy-delivering normal operating state occurs within a pre-given length of time, wherein this length of time is one minute.

Claim 12 (canceled)